



## FACT SHEET

**The United States Environmental Protection Agency (EPA)  
Proposes To Reissue  
A National Pollutant Discharge Elimination System (NPDES) Permit to:**

**City of Orofino  
P.O. Box 312  
Orofino, Idaho 83544**

NPDES Permit Number: ID-002015-0

Public Notice Start Date: November 18, 2010

Public Notice Expiration Date: December 23, 2010

Technical Contact: John Drabek, 206-553-8257, drabek.john@epa.gov  
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### **EPA Proposes To Reissue NPDES Permit**

EPA proposes to reissue the NPDES permit to the facility referenced above. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to waters of the United States. In order to ensure protection of water quality and human health, the permit place limits on the types and amounts of pollutants that can be discharged from each facility.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations, and other conditions for each facility
- a map and description of the discharge locations
- technical material supporting the conditions in the permit

### **State Certification for Facilities that Discharge to Tribal Waters**

Section 301(b)(1)(C) of the Clean Water Act (Act) requires that NPDES permits contain effluent limits necessary to meet water quality standards. A State/Tribe's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The use classification system designates the beneficial uses (such as cold water biota, contact recreation, etc.) that each water body is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the State/Tribe to support the beneficial use classification of each water body. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

The Nez Perce Tribe has not applied for the status of Treatment as a State (TAS) from the EPA

for purposes of the Clean Water Act. When the Nez Perce Tribe is granted TAS, and when it has Water Quality Standards (WQS) approved by EPA, those tribal WQS will be used for determining effluent limitations. Meanwhile, the Idaho WQS were used as reference for setting permit limits, and to protect downstream uses in the State of Idaho.

### **Public Comment**

Persons wishing to comment on, or request a Public Hearing for the draft permit for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires and all comments have been considered, EPA Region 10's Director for the Office of Water and Watersheds will make a final decision regarding permit reissuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If comments are received, EPA will address the comments and issue the permit. In such a case, the permit will become effective at least 30 days after the issuance date unless an appeal is submitted to the Environmental Appeals Board within 30 days.

### **Documents are Available for Review.**

The draft permit and fact sheet are posted on the Region 10 website at <http://yosemite.epa.gov/r10/WATER.NSF/NPDES+Permits/DraftPermitsID>. Copies may also be requested by writing to EPA at the Seattle address below, by e-mailing [washington.audrey@epa.gov](mailto:washington.audrey@epa.gov), or by calling Audrey Washington at 206-553-0523 or (800) 424-4372 ext 0523 (within Alaska, Idaho, Oregon, & Washington). Copies may also be inspected and copied at the offices below between 8:30 a.m. and 4:00 P.M., Monday through Friday, except federal holidays. In Seattle, visitors report to the 12<sup>th</sup> floor Public Information Center.

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For technical questions regarding the permit or fact sheet, contact John Drabek at the phone number or e-mail address at the top of this fact sheet. Those with impaired hearing or speech may contact a TDD operator at 1-800-833-6384 and ask to be connected to the appropriate phone number. Persons with disabilities may request additional services by contacting John Drabek.

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## **APPLICANT**

This fact sheet provides information on the draft NPDES permit for the following entity:

Facility Name: City of Orofino, Wastewater Treatment Plant

Mailing Address: P.O. Box 312, Orofino, Idaho 83544

Facility Address: 10200 Highway 12, Orofino, Idaho 83544

Contact: Larry Annen, Wastewater Works Superintendent, (208) 476-5051

## **I. FACILITY INFORMATION**

### **A. Facility Description**

The City of Orofino owns, operates and has maintenance responsibility for a facility that treats domestic sewage and commercial wastewater discharge. The facility receives wastewater primarily from local residents and commercial establishments through a separate sanitary sewer system.

Raw wastewater collected on the east side of the Clearwater River is pumped across the river by the main pump station to the influent structure at the treatment plant. Raw wastewater collected on the west side of the river and return flows from the treatment plant are pumped by the commercial lift station to the influent structure.

The raw wastewater undergoes coarse screening and grit removal to eliminate equipment-damaging material. The wastewater then enters the oxidation ditch where a biological system effectively removes organic matter present in the wastewater. Secondary clarification follows. The effluent is then disinfected with chlorine and discharged to the Clearwater River. Wastewater is discharged at an average daily flow rate of 0.46 million gallons per day.

The current service population is estimated to be 2100 people. The WWTP has a design flow rate of 0.88 mgd. The annual average daily flow reported in the permit application is 0.46 mgd, while the maximum daily flow rate was 1.3 mgd. The facility is located in Indian Country and discharges to Tribal waters.

### **Permit History**

The facility's previous permit became effective on November 23, 2003 and expired on November 24, 2008. An application was received May 30, 2008 and the permit administratively extended.

### **B. Compliance History**

A review of the DMRs from August 2007 to July 2010 found the following violations only in the month of November 2008:

Total Suspended solids

A violation of the monthly average concentration limit of 30 mg/L, at 85.4.

A violation of the monthly average load limit of 220 lb/day, at 257.

A violation of the weekly average concentration limit of 45 mg/L, at 206.

A violation of the weekly average load limit of 330 lb/day, at 620.

Total Suspended solids, percent removal

A violation of the monthly limit of 85% minimum removal, at 75.9.

## **II. RECEIVING WATER**

The treated effluent from the City of Orofino's wastewater treatment facility is discharged continuously to the Clearwater River just upstream of the confluence with the North Fork of the Clearwater River, which is within the Clearwater Basin, Clearwater subbasin of Idaho's *Water Quality Standards and Wastewater Treatment Requirements* (IDAPA 58.01.02.120.08.). The discharge is in the Clearwater River, Lolo Creek to North Fork Clearwater River, and the standards protect the following beneficial use classifications: cold water aquatic life; special resource water, salmonid spawning; primary contact recreation; aesthetics; wildlife habitats; and domestic, agricultural, and industrial water supply. The outfall is located at latitude 46° 29' 14" N and longitude 116° 15' 59" W.

### **A. Water Quality Standards**

Section 301(b)(1)(c) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Federal regulations in 40 CFR 122.4(d) prohibit the issuance of an NPDES permit which does not ensure compliance with the water quality standards.

A State's water quality standards are composed of use classifications, numeric and narrative water quality criteria and an anti-degradation policy. The use classification system designates the beneficial uses (such as cold water biota, contact recreation, etc.) that each water body is expected to achieve. The numeric and narrative water quality criteria are the criteria deemed necessary, by the State, to support the beneficial use classification of each water body.

### **B. Water Quality Limited Segment**

Any waterbody for which the water quality does not meet, applicable water quality standards is defined as a "water quality limited segment".

Section 303(d) of the Clean Water Act (CWA) requires states to develop a Total Maximum Daily Load (TMDL) management plan for water bodies determined to be water quality limited segments. The TMDL documents the amount of a pollutant a water body can assimilate without violating a state's water quality standards and allocates that load to known point sources and nonpoint sources. The main stem of the Clearwater River is not listed for any pollutant.

### III. EFFLUENT LIMITATIONS

#### A. Basis for Permit Effluent Limits

In general, the CWA requires that the limits for a particular pollutant be the more stringent of either technology-based effluent limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards of a waterbody are being met and they may be more stringent than technology-based effluent limits. The basis for the proposed effluent limits in the draft permit are provided in Appendix B of this document.

#### B. Proposed Effluent Limitations

The following summarizes the proposed effluent limitations that are in the draft permit:

1. There must be no discharge of any floating solids, visible foam in other than trace amounts, or oily wastes that produce a sheen on the surface of the receiving water.
2. Table 1 below presents the proposed effluent limitations.

<b>Table 1</b> <b>Effluent Limitations</b>				
Parameters	Average Monthly Limit	Average Weekly Limit	Minimum Percent Removal <sup>1</sup>	Instantaneous Maximum Limit
Flow	--	--	---	--
BOD <sub>5</sub>	30 mg/L	45 mg/L	85%	--
	220 lbs/day <sup>2</sup>	330 lbs/day <sup>2</sup>		--
TSS	30 mg/L	45 mg/L	85%	--
	220 lbs/day <sup>2</sup>	330 lbs/day <sup>2</sup>		--
<i>E. coli</i> Bacteria	126 colonies /100mL <sup>3</sup>	--	--	406 colonies /100mL
Total Residual Chlorine	0.5 mg/L	0.75 mg/L	--	--
	3.6 lbs/day	5.5 lbs/day	--	--
pH	6.5 – 9.0 standard units			

1. Percent removal is calculated using the following equation:  $((\text{influent} - \text{effluent}) / \text{influent}) \times 100$ , this limit applies to the average monthly values.
2. Loading limits are calculated by multiplying the concentration in mg/L by the design flow and a conversion factor of 8.34 lbs/gallon.
3. Based on the geometric mean of all samples taken during the month.

#### IV. MONITORING REQUIREMENTS

##### A. Basis for Effluent and Surface Water Monitoring Requirements

Section 308 of the CWA and federal regulation 40 CFR §122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring is also required to characterize the effluent to determine if additional effluent limitations are required and to monitor effluent impacts on receiving water quality.

##### B. Effluent Monitoring Requirements

###### Parameters

###### BOD<sub>5</sub>, TSS, *E. coli*, Flow and Total Residual Chlorine

The permit requires monitoring BOD<sub>5</sub>, TSS, flow, *E. coli*, pH and total residual chlorine to determine compliance with the effluent limits. The permit also requires monitoring of the influent for BOD<sub>5</sub> and TSS to calculate monthly removal rates.

###### Ammonia

Ammonia discharges do not have a reasonable potential to violate the water quality standards of the Clearwater River and a limit is not required. Ammonia is a parameter commonly monitored for POTWs to determine performance and will determine impacts to the Clearwater River. Monitoring for ammonia is again required however it is expanded from a period of one year in the existing permit to the five year term of the new permit to insure no increase in discharges from the previous permit.

###### Application Form 2A Monitoring

The City of Orofino WWTP is a minor NPDES facility (i.e., <1 MGD design flow). Monitoring for reapplication is required over a three year period as required in NPDES Application Form 2A Effluent Testing Data.

###### Frequency

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA approved test methods (generally found in 40 CFR §136) and if the Method Detection Limits (MDLs) are less than the effluent limits.

Table 2 presents the effluent monitoring requirements for the permittee in the draft permit. Each of the effluent monitoring requirements from the previous permit was evaluated to determine whether the requirements should be continued, updated or eliminated.

The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.



**Table 2**  
**Effluent Monitoring Requirements**

Parameter	Unit	Sample Location	Sample Frequency	Sample Type
Flow	mgd	Effluent	Continuous	Recording
BOD <sub>5</sub>	mg/L	Influent and Effluent <sup>5</sup>	1/month	8-hour composite
	lbs/day	Effluent	1/month	Calculation
	% Removal	---	---	Calculation
TSS	mg/L	Influent and Effluent <sup>5</sup>	1/month	8-hour composite
	lbs/day	Effluent	1/month	Calculation
	% Removal	---	---	Calculation
pH	standard units	Effluent	5/week	Grab
<i>E.coli</i> Bacteria	colonies/100 ml	Effluent	5/month	Grab
Total Residual Chlorine	mg/L	Effluent	5/week	Grab
	lbs/day			
Total Ammonia Nitrogen	mg/L	Effluent	1/month	8-hour composite
NPDES Application Form 2A Effluent Testing Data	mg/L	Effluent	1 each in 2 <sup>nd</sup> , 3 <sup>rd</sup> , & 4 <sup>th</sup> years of the permit	See footnote 6

5. Influent and effluent composite samples shall be collected during the same 8-hour period.

6. For Effluent Testing Data, in accordance with instructions in NPDES Application Form 2A, Part B.6.

## V. SLUDGE (BIOSOLIDS) REQUIREMENTS

EPA Region 10 separates wastewater and sludge permitting. Under the CWA, EPA has the authority to issue separate sludge-only permits for the purposes of regulating biosolids. EPA may issue a sludge-only permit to each facility at a later date, as appropriate.

In the absence of a sludge-only permit, sludge management and disposal activities at each facility continue to be subject to the national sewage sludge standards at 40 CFR Part 503 and any requirements of the State's biosolids program. Since the 40 CFR Part 503 regulations are self-implementing, the permittees must comply with them whether or not a permit has been issued.

The proposed permit requires the permittee to submit a biosolids permit application (NPDES Form 2S) before sewage sludge is removed from the lagoon. The application is required by 40 CFR 122.21(a)(i), 122.21(a)(ii)(H), and 122.21(c)(2). The regulations require 180 days so EPA has time to evaluate the information, ask for additional information and prepare the permit.

## **VII. OTHER PERMIT CONDITIONS**

### **A. Quality Assurance Plan Implementation**

The federal regulation at 40 CFR §122.41(e) requires the permittee to develop procedures to ensure that the monitoring data submitted to EPA are accurate and to explain data anomalies if they occur. The permittee is required to develop or update and implement a Quality Assurance Plan within 90 days of the effective date of the final permit. The Quality Assurance Plan shall consist of standard operating procedures that the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis and data reporting. The plan shall be retained on site and be made available to EPA and IDEQ upon request.

### **B. Operation and Maintenance Plan Implementation**

The permit requires the Permittee to properly operate and maintain all facilities and systems of treatment and control. Proper operation and maintenance is essential to meeting discharge limits, monitoring requirements, and all other permit requirements at all times. The Permittee is required to develop and implement an operation and maintenance plan for its facility within 180 days of the effective date of the final permit. The plan shall be retained on site and made available to EPA and IDEQ upon request.

### **C. Sanitary Sewer Overflows and Proper Operation and Maintenance**

Untreated or partially treated discharges from separate sanitary sewer systems are referred to as sanitary sewer overflows (SSOs). SSOs may present serious risks of human exposure when released to certain areas, such as streets, private property, basements, and receiving waters used for drinking water, fishing and shellfishing, or contact recreation. Untreated sewage contains pathogens and other pollutants, which are toxic. SSOs are not authorized under this permit. Pursuant to the NPDES regulations, discharges from separate sanitary sewer systems authorized by NPDES permits must meet effluent limitations that are based upon secondary treatment. Further, discharges must meet any more stringent effluent limitations that are established to meet EPA-approved state water quality standards.

The permit contains language to address SSO reporting and public notice and operation and maintenance of the collection system. The permit requires that the permittee identify SSO occurrences and their causes. In addition, the permit establishes reporting, record keeping and third party notification of SSOs. Finally, the permit requires proper operation and maintenance of the collection system. The following specific permit conditions apply:

**Immediate Reporting** – The permittee is required to notify the EPA of an SSO within 24 hours of the time the permittee becomes aware of the overflow. (See 40 CFR 122.41(l)(6))

**Written Reports** – The permittee is required to provide the EPA a written report within five days of the time it became aware of any overflow that is subject to the immediate reporting provision. (See 40 CFR 122.41(l)(6)(i)).

**Third Party Notice** – The permit requires that the permittee establish a process to notify specified third parties of SSOs that may endanger health due to likelihood of human exposure or of unanticipated bypasses and upsets that exceed any effluent limitation in the permit or that may endanger health due to a likelihood of human exposure. The permittee is required

to develop, in consultation with appropriate authorities at the local, county, and/or state level, a plan that describes how, under various overflow (and unanticipated bypass and upset) scenarios, the public, as well as other entities, would be notified of overflows that may endanger health. The plan should identify all overflows that would be reported, to whom, and the specific information that would be reported. The plan should include a description of lines of communication and the identities of responsible officials. (See 40 CFR 122.41(l)(6)).

**Record Keeping** – The permittee is required to keep records of SSOs. The permittee must retain the reports submitted to the EPA and other appropriate reports that could include work orders associated with investigation of system problems related to a SSO, that describes the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the SSO. (See 40 CFR 122.41(j)).

**Proper Operation and Maintenance** – The permit requires proper operation and maintenance of the collection system. (See 40 CFR 122.41(d) and (e)). SSOs may be indicative of improper operation and maintenance of the collection system. The permittee may consider the development and implementation of a capacity, management, operation and maintenance (CMOM) program.

The permittee may refer to Guide for Evaluating Capacity, Management, Operation, and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (EPA 305-B-05-002). This guide identifies some of the criteria used by EPA inspectors to evaluate a collection system's management, operation and maintenance program activities. Owners/operators can review their own systems against the checklist (Chapter 3) to reduce the occurrence of sewer overflows and improve or maintain compliance.

#### **D. Additional Permit Provisions**

Sections III, IV, and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because they are based on federal regulations, they cannot be challenged in the context of an individual NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

### **VIII. OTHER LEGAL REQUIREMENTS**

#### **A. Endangered Species Act**

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (FWS) if their actions could adversely affect any threatened or endangered species. According to FWS (September, 2010) Bull Trout (*Salvelinus confluentus*) in the mainstem of the Clearwater River is listed as threatened. NOAA lists Fall Chinook Salmon (*Oncorhynchus tshawytscha*) and Steelhead (*Oncorhynchus mykiss*) as threatened.

Based on the following considerations, EPA again concludes as it did for the existing permit and BE that this permit has no effect on endangered or threatened species under the jurisdiction of FWS.

### Bull Trout

1. The U.S. Fish and Wildlife Service *Draft Bull Trout Recovery Plan* October, 2002 identified causes of the Bull Trout listing. They are isolation and habitat fragmentation, poaching, non-native species, residential development, mining, transportation networks and agricultural practices. Neither Orofino or any sewage treatment plant is identified as a contributing factor to the decline in Bull Trout. A biological evaluation (BE) was prepared for the last permit issuance analyzing the effects of the discharge on Bull Trout. The BE and EPA found that the issuance of that permit had no effect on Bull Trout. ‘
2. High acute dilution ratio of 106 to 1 and high chronic dilution ratio of 140 to 1.
3. Secondary Treatment
4. Chlorine dissipates very quickly (within minutes) and does not bioaccumulate or cause chronic toxicity problems
5. Technology based chlorine limits, monitoring and reporting to insure compliance.
6. Compliance with water quality standards for pH and bacteria at the point of discharge.
7. This permit requires compliance with the State of Idaho Surface Water Quality Standards that protect aquatic organisms including threaten and endangered species.

### Fall Chinook Salmon and Steelhead

Based on the same reasons listed for Bull Trout EPA again concludes as it did for the existing permit and BE that this permit has no effect on the threatened species under the jurisdiction of NOAA.

### **B. Essential Fish Habitat**

Essential fish habitat (EFH) includes the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. The EFH regulations define an adverse effect as any impact which reduces quality or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

The area of the discharge is designated proposed critical habitat for bull trout. Due to the same reasons listed in VIII.A EPA again concludes that issuance of this permit has no affect on EFH.

### **C. State Certification**

Section 401 of the CWA requires EPA to seek State certification before issuing a final permit. As a result of the certification, the State may require more stringent permit

conditions or additional monitoring requirements to ensure that the permit complies with water quality standards, or treatment standards established pursuant to any State law or regulation. The state in which the discharge originates is typically responsible for issuing the certification pursuant to CWA Section 401(a)(1). In the case where the state has no authority to give 401 certification, such as for a discharge located within the boundaries of an Indian Reservation, EPA provides the certification. The point of discharge of the outfall is also located within boundaries of the Nez Perce Indian Reservation. Tribes may issue 401 certification for discharges within their boundaries if the Tribe has been approved by the EPA pursuant to CWA Section 518(e) and 40 CFR Section 131.8 to administer a water quality standards program. The Nez Perce Tribe has not been authorized to provide 401 certification; therefore, EPA is responsible for issuing the 401 certification in this case. However, in the course of issuing this NPDES Permit, EPA has consulted with the Nez Perce Tribes.

#### **D. Permit Expiration**

The permit will expire five years from the effective date of the permit.

### **IX. DEFINITIONS AND ACRONYMS**

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
AML	Average Monthly Limit
BOD <sub>5</sub>	Biochemical oxygen demand, five-day
°C	Degrees Celsius
cfs	Cubic feet per second
CFR	Code of Federal Regulations
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
lbs/day	Pounds per day
LTA	Long Term Average
mg/L	Milligrams per liter
ml	milliliters
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit (depending on the context)
NOAA	National Oceanographic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
POTW	Publicly owned treatment works
QAP	Quality assurance plan

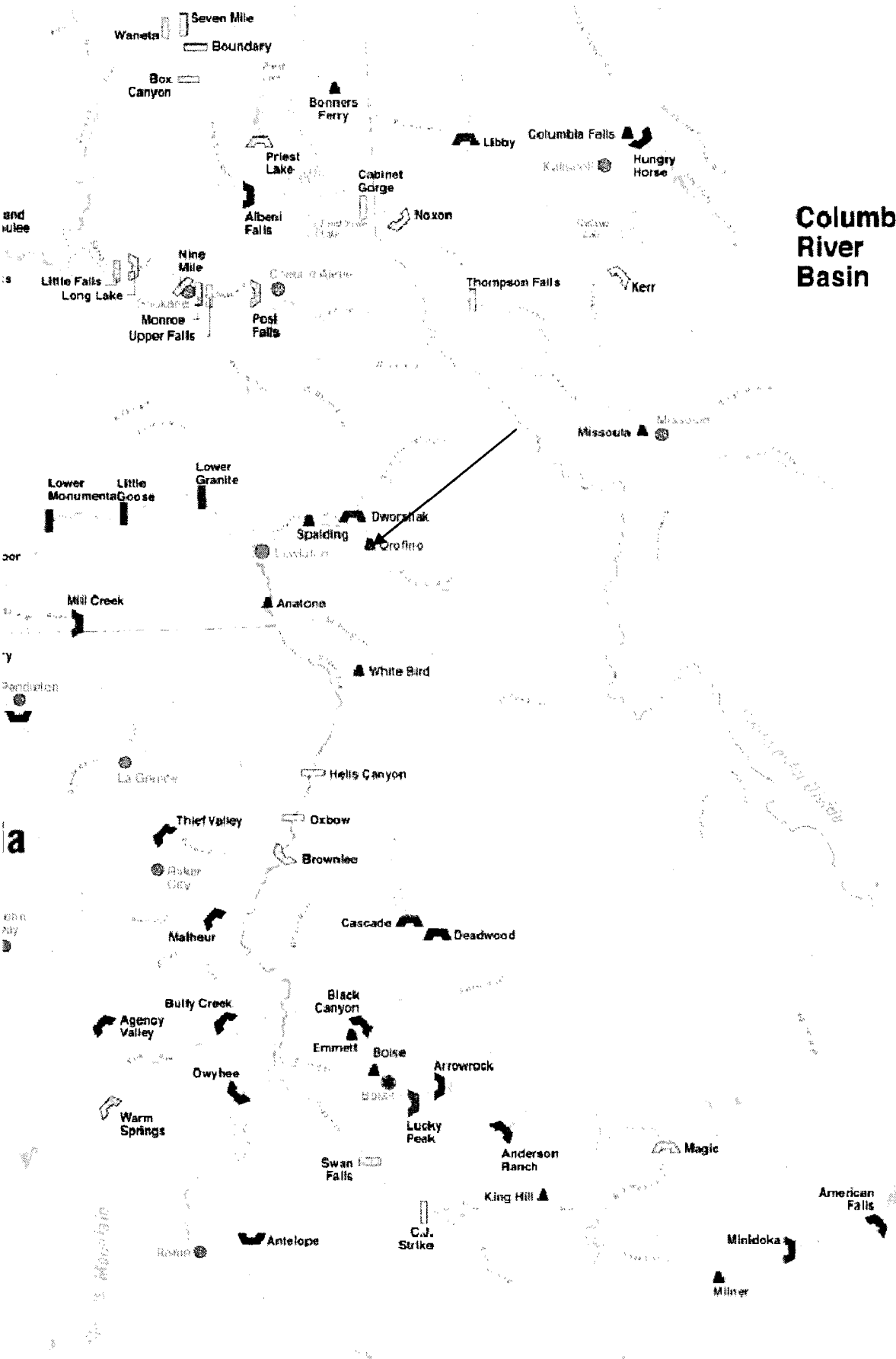
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
s.u.	Standard Units
TMDL	Total Maximum Daily Load
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document (EPA, 1991)
TSS	Total suspended solids
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet radiation
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WWTP	Wastewater treatment plant

## **X. REFERENCES**

1. City of Orofino, ID, NPDES permit, effective November 24, 2003 to November 24, 2008.
2. Idaho Administrative Procedures Act (IDAPA), 2006. Section 58, Water Quality Standards and Wastewater Treatment Requirements. Idaho Department of Environmental Quality Rules, Title 01, Chapter 02.
3. U.S. EPA, 1973. *Water Quality Criteria 1972* (EPA R3-73-033).
4. EPA. 1991. Technical Support Document for Water Quality-based Toxics Control. US Environmental Protection Agency, Office of Water, EPA/505/2-90-001.
5. EPA, 1996. U.S. EPA NPDES Permit Writer's Manual, US Environmental Protection Agency, Office of Water, EPA-833-B-96-003.

## Appendix A – Location Map and Discharge Point to the Clearwater River







## Appendix B – Basis of Effluent Limitations

The following discussion explains in more detail the statutory and regulatory basis for the technology and water quality-based effluent limits in the draft permit. Part A discusses technology-based effluent limits, Part B discusses water quality-based effluent limits in general, and Part C discusses facility specific water quality-based effluent limits.

### A. Technology-Based Effluent Limits

The CWA requires POTWs to meet requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as “secondary treatment,” which all POTWs were required to meet by July 1, 1977. EPA has developed and promulgated “secondary treatment” effluent limitations, which are found in 40 CFR 133.102. These technology-based effluent limits apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD<sub>5</sub>, TSS and pH. The federally promulgated secondary treatment effluent limits are listed in Table B-1.

<b>Table B-1: Secondary Treatment Effluent Limits (40 CFR 133.102)</b>			
<b>Parameter</b>	<b>Average Monthly Limit</b>	<b>Average Weekly Limit</b>	<b>Range</b>
BOD <sub>5</sub>	30 mg/L	45 mg/L	---
TSS	30 mg/L	45 mg/L	---
Removal Rates for BOD <sub>5</sub> and TSS	85% (minimum)	---	---
pH	---	---	6.0 - 9.0 s.u.

### *Mass-based Limits*

The federal regulations at 40 CFR §122.45(b) and (f) require that POTW limitations to be expressed as mass-based limits using the design flow of the facility. The mass-based limits, expressed in lbs/day, are calculated as follows based on the design flow:

$$\text{Mass-based limit (lbs/day)} = \text{concentration limit (mg/L)} \times \text{design flow (mgd)} \times 8.34$$

Example calculation for BOD<sub>5</sub> mass based limit:

$$\text{Mass-based limit (lbs/day)} = 30 \text{ mg/L} \times 0.88 \text{ mgd} \times 8.34 = 220 \text{ lbs per day.}$$

### ***Chlorine***

Chlorine is often used to disinfect municipal wastewater prior to discharge. The Water Pollution Control Federation's *Chlorination of Wastewater* (1976) states that a properly designed and maintained wastewater treatment facility can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after 15 minutes of contact time. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/L limit on a monthly average basis. The average weekly limit is expressed as 1.5 times the average monthly limit or in this case 0.75 mg/L. The technology based limits for total residual chlorine are 0.5 mg/L average monthly and 0.75 mg/l average weekly. This level of control has been achieved over the last five years.

Finally, since the federal regulation at 40 CFR 122.45(f) requires limitations to be expressed as mass based limits using the design flow of the facility, mass based limits are calculated as follows:

$$\text{Monthly average} = 0.5 \text{ mg/L} \times 0.88 \text{ mgd} \times 8.34 = 3.6 \text{ lbs/day}$$

$$\text{Weekly average} = 0.75 \text{ mg/L} \times 0.88 \text{ mgd} \times 8.34 = 5.5 \text{ lbs/day}$$

## **B. Water Quality-Based Effluent Limits**

### ***Statutory Basis for Water Quality-Based Limits***

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards by July 1, 1977.

The NPDES regulation 40 CFR §122.44(d)(1), implementing Section 301 (b)(1)(C) of the CWA, requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state/tribal water quality standard, including state/tribal narrative criteria for water quality.

The regulations require that this evaluation be made using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met and must be consistent with any available wasteload allocation. Reasonable Potential Analysis

When evaluating the effluent to determine if water quality-based effluent limits based on chemical specific numeric criteria are needed, a projection of the receiving water concentration downstream of where the effluent enters the receiving water for each pollutant of concern is made. The chemical-specific concentration of the effluent and receiving water and, if appropriate, the dilution available from the receiving water are factors used to project the receiving water concentration. If the projected concentration of the receiving water exceeds the numeric criterion for a limited parameter, then there is a reasonable potential that the discharge may cause or contribute to an excursion above the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it is appropriate to allow a small volume of receiving water to provide dilution of the effluent; these volumes are called mixing zones. Mixing zone allowances will increase the

allowable mass loadings of the pollutant to the water body and decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and the concentration of the pollutant of concern in the receiving water is below the numeric criterion necessary to protect the designated uses of the water body. Mixing zones must be authorized by the State. The State of Idaho authorized a mixing zone of 25 percent of the receiving water resulting in an acute dilution ratio of 106 to 1 and a chronic dilution ratio of 140 to 1.

The chronic ammonia criterion is expressed as a 30-day average not to be exceeded more than once every three years. The 30B3 is a biologically-based design flow intended to ensure an excursion frequency of once every three years for a 30-day average flow rate. The averaging period (30 days) and the excursion frequency (3 years) are consistent with the chronic ammonia criterion. This results in a dilution ratio of 184.

$$D = \frac{Q_e + Q_u(MZ)}{Q_e}$$

D = Dilution Ratio

$Q_e$  = Effluent flow rate (set equal to the design flow of the WWTP)

$Q_u$  = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10 or 30B3)

Based on USGS Station 13340000 in the Clearwater River upstream of the Orofino WWTP discharge

MZ = is the fraction of the receiving water flow available for dilution.

$Q_e$  = maximum effluent flow = 0.88 mgd

$Q_u$  = 1Q10 = upstream acute critical low flow = 576 CFS = 372 mgd [1 cfs = 0.65 mgd]

$$\text{Acute dilution ratio} = \frac{0.88 + 372(0.25)}{0.88} = 106$$

$Q_u$  = 7Q10 = upstream chronic critical low flow = 755 CFS = 490 mgd

$$\text{Chronic dilution ratio} = \frac{0.88 + 490(0.25)}{0.88} = 140$$

$Q_u$  = 30B3 = ammonia upstream chronic critical low flow = 989 CFS = 643 mgd

$$\text{Ammonia Chronic dilution ratio} = \frac{0.88 + 643(0.25)}{0.88} = 184$$

### ***Procedure for Deriving Water Quality-based Effluent Limits***

The first step in developing a water quality-based effluent limit is to develop a wasteload allocation (WLA) for the pollutant. A wasteload allocation is the concentration or loading of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water.

In cases where a mixing zone is not authorized, either because the receiving water already exceeds the criterion, the receiving water flow is too low to provide dilution, or the State does not authorize one, the criterion becomes the WLA. Establishing the criterion as the wasteload allocation ensures that the permittee will not cause or contribute to an exceedance of the criterion. The following discussion details the specific water quality-based effluent limits in the draft permit.

### **C. Facility-Specific Water Quality-based Limits**

Once the WLA has been developed, EPA applies the statistical permit limit derivation approach described in Chapter 5 of the TSD to obtain daily maximum and monthly average permit limits. This approach takes into account effluent variability (using the CV), sampling frequency and the difference in time frames between the monthly average and daily maximum limits.

The daily maximum limit is based on the CV of the data and the probability basis, while the monthly average limit is dependent on these two variables and the monitoring frequency. As recommended in the TSD, EPA used a probability basis of 95 percent for monthly average limit calculation and 99 percent for the daily maximum limit calculation.

#### ***Floating, Suspended or Submerged Matter/Oil and Grease***

The Idaho Water Quality Standards (IDAPA 58.01.02.200.05) require surface waters of the State to be free from floating, suspended or submerged matter of any kind in concentrations causing nuisance or objectionable conditions that may impair designated beneficial uses. A narrative condition is proposed for the draft permit that states there must be no discharge of floating solids or visible foam or oil and grease other than trace amounts.

#### ***pH***

The Idaho Water Quality Standards (IDAPA 58.01.02.250.01.a) require surface waters of the State to have a pH value within the range of 6.5 - 9.5 standard units. It is anticipated that mixing zones will not be authorized for the water quality-based criterion for pH. Therefore, this criterion must be met when the effluent is discharged to the receiving water. The technology-based effluent limits for pH are 6.0 - 9.0 standard units. To ensure that both water quality-based requirements and technology-based requirements are met, the draft permit incorporates the more stringent lower limit of the water quality standards (6.5 standard units) and the more stringent upper limit of the technology-based limits (9.0 standard units). The City achieved these levels of control over the last five years.

#### ***Chlorine***

Chlorine has a chronic aquatic life criterion of 11 µg/L and an acute aquatic life criterion 19 µg/L in the Clearwater River. Orofino does not have a reasonable potential to violate the water quality standards for chlorine.

EPA will continue with the technology based limits of 0.5 mg/l average monthly and 0.75 mg/l weekly derived for the last permit. This level of control is achieved. The highest monthly average measured over the last five years was 0.4 mg/L. The highest weekly average was 0.5 mg/L.

### ***Ammonia, Total (as Nitrogen)***

The Idaho water quality standards contain criteria for the protection of aquatic life from the toxic effects of ammonia (IDAPA 58.01.02.250.01.d.). The water quality standards apply the criteria for early life stages to water bodies (IDAPA 58.01.02.250.01.d.(3)). The criteria are dependent on pH and temperature, because the fraction of ammonia present as the toxic, un-ionized form increases with increasing pH and temperature. Therefore, the criteria become more stringent as pH and temperature increase. Fresh water ammonia criteria are calculated according to the equations in Table B-2.

<b>Table B-2 Water Quality Criteria for Ammonia</b>	
<b>Acute Criterion</b>	<b>Chronic Criterion</b>
$\frac{0.275}{1+10^{7.204-\text{pH}}} + \frac{39}{1+10^{\text{pH}-7.204}}$	$\left( \frac{0.0577}{1+10^{7.688-\text{pH}}} + \frac{2.487}{1+10^{\text{pH}-7.688}} \right) \times \text{MIN}(2.85, 1.45 \times 10^{0.028 \times (25-T)})$

Ambient ammonia, temperature and pH data are from the surface water monitoring from May, 2002 through November, 2004 required during the last permit cycle. The 95<sup>th</sup> percentile of pH and temperature data are used to derive the acute and chronic criteria.

95 <sup>th</sup> Percentile Ambient pH	7.36
95 <sup>th</sup> Percentile Ambient Temperature °C	23
Highest Background Ammonia mg/L	0.11
Highest Discharge Ammonia mg/L	7.25
Coefficient of Variation	0.65

The ammonia acute standard is 16.2 mg/L and the chronic standard is 2.82 mg/L.

The reasonable potential analysis shows that there is no reasonable potential for the facility's discharge to cause or contribute to an exceedance of the acute or chronic criteria, therefore, effluent limits are not required. Ammonia is a parameter commonly monitored for POTWs to determine performance. Monitoring will again be required. This will also determine impacts to the Clearwater River. Receiving water monitoring will not be required.

### ***Escherichia coli (E. coli) Bacteria***

The Clearwater River at the point of discharge is designated for primary contact recreation. Waters of the State of Idaho that are designated for recreation are not to contain *E. coli* bacteria in concentrations exceeding 126 organisms per 100 ml as a geometric mean based on a minimum of five samples taken every three to seven days over a thirty day period (IDAPA 58.01.02.251.01.a). The draft compliance monitoring schedule contains a monthly geometric mean effluent limit for *E. coli* of 126 organisms per 100 ml.

The Idaho water quality rules also state that for primary contact recreation a single water sample that exceeds 406 organisms/100 ml indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. (IDAPA § 58.01.02.251.01.b.ii).

The goal of a water quality-based effluent limit is to ensure a low probability that water quality standards will be exceeded in the receiving water as a result of a discharge, while considering the variability of the pollutant in the effluent (EPA, 1991). Because a single sample value exceeding 406 organisms/100 ml may indicate an exceedance of the geometric mean criterion, EPA has included an instantaneous (single grab sample) maximum effluent limit for *E. coli* of 406 organisms/100 ml, in addition to a monthly geometric mean limit of 126 organisms/100 ml, which directly implements the water quality criterion for *E. coli*. This will ensure that the discharge will have a low probability of exceeding the geometric mean criterion for *E. coli* and provide warning of and opportunity to avoid possible non-compliance with the geometric mean criterion.

### ***Antidegradation***

#### **Overview**

EPA is required under Section 301(b)(1)(C) of the Clean Water Act (CWA) and implementing regulations (40 CFR 122.4(d) and 122.44(d)) to establish conditions in NPDES permits that ensure compliance with State water quality standards, including antidegradation requirements. The fact that the State of Idaho has not identified methods for implementing its antidegradation policy does not necessarily prevent EPA from establishing such permit conditions.

The City of Orofino NPDES permit contains limits as stringent as necessary to ensure compliance with all applicable water quality standards, including Idaho's antidegradation policy (IDAPA 58.01.02.051). As explained in detail below, the reissued permit ensures that "the existing in stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected" consistent with the requirements of 40 CFR 131.12(a)(1) and IDAPA 58.01.02.051.01. Relative to the prior permit issued in 2003, the reissued permit does not allow lower water quality for those parameters where the receiving water quality "exceeds levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water," therefore, the reissued permit maintains and protects the existing level of water quality, consistent with 40 CFR 131.12(a)(2) and IDAPA 58.01.02.051.02. Finally, the antidegradation policy for outstanding resource waters is inapplicable in this reissued permit because no waters of the State of Idaho are designated as "outstanding resource waters" (IDAPA 58.01.02.051.03).

The draft reissued permit ensures compliance with the State of Idaho's antidegradation policy and CWA regulations because the permit conditions ensure protection of existing uses and do not allow lower water quality relative to the prior permit. Under the circumstances of this draft reissued permit, EPA may issue an NPDES permit even though the State has not yet identified methods for implementing its antidegradation policy. In its antidegradation analysis below, EPA is applying a parameter-by-parameter approach in determining compliance with Idaho's antidegradation requirements.

### EPA Antidegradation Analysis

#### Protection of Existing Uses (IDAPA 58.01.02.051.01 and 40 CFR 131.12(a)(1))

The segment of the Clearwater River that receives the Orofino discharge has the following designated beneficial uses: cold water aquatic life; special resource water; salmonid spawning; primary contact recreation; aesthetics; wildlife habitats; and domestic, agricultural, and industrial water supply. The effluent limits in the draft permit ensure compliance with applicable numeric and narrative water quality criteria. The numeric and narrative water quality criteria are set at levels that ensure protection of the designated uses. As there is no information indicating the presence of existing beneficial uses other than those that are designated the draft permit ensures a level of water quality necessary to protect the designated uses and, in compliance with IDAPA 58.01.02.051.01 and 40 CFR 131.12(a)(1), also ensures that the level of water quality necessary to protect existing uses is maintained and protected. If EPA receives information during the public comment period demonstrating that there are existing uses for which the Clearwater River is not designated, EPA will consider this information before issuing a final permit and will establish additional or more stringent effluent limitations if necessary to ensure protection of existing uses.

#### High Quality Waters (IDAPA 58.01.02.051.02 and 40 CFR 131.12(a)(2))

Orofino discharges to a segment (assessment unit) of the Clearwater River that is considered high quality for all of the pollutants of concern. As such, the quality of the Clearwater River must be maintained and protected, unless it is deemed appropriate and necessary to allow a lowering of water quality (IDAPA 58.01.02.051.02, 40 CFR 131.12(a)(2)).

All of the effluent limits in the reissued permit are as stringent as or more stringent than the corresponding limits in the prior (2003) permit. Because the limits are as stringent as or more stringent than the corresponding limits in the prior permit, the reissued permit will not allow lower water quality for pollutants that were limited in the prior permit.

As to those pollutants present in the discharge without effluent limits in both the reissued permit and the prior permit, there is no factual basis to expect that those pollutants will be discharged in greater amounts under the reissued permit than were authorized in the prior permit. Similarly, there is no factual basis to expect that the effluent contains any new pollutants that have not been discharged previously. EPA reached these conclusions because the permit application and the discharge monitoring report data indicate no changes in the design flow, influent quality or treatment processes that could result in a new or increased discharge of pollutants.

### Summary

As explained above, the effluent limits in the draft reissued permit are adequately stringent to ensure that existing uses are maintained and protected, in compliance with IDAPA 58.01.02.051.01 and 40 CFR 131.12(a)(1).

The effluent limits in the reissued permit are as stringent as or more stringent than the corresponding limits in prior permit for all parameters. Furthermore, the reissued permit will not authorize an increased discharge of any pollutants that were not subject to effluent limits under the prior permit.

The reissuance of the City of Orofino NPDES permit will therefore not allow lower water quality relative to the prior permit, in compliance with IDAPA 58.10.02.051.02 and 40 CFR

131.12(a)(2). Consequently, there is no need for the State of Idaho to make a finding that “allowing lower water quality is necessary to accommodate important economic or social development” under IDAPA 58.01.02.051.02. Under these circumstances, EPA may issue an NPDES permit even though the State of Idaho has not yet identified methods for implementing its antidegradation policy.



## REASONABLE POTENTIAL FOR AQUATIC LIFE

		State Water Quality Standard		Max concentration at edge of...										
	Ambient Conc.	Chronic	Acute	Acute Mixing Zone	Chronic Mixing Zone	LIMIT REQ'D?	Effluent percentile value		Max effluent conc. measure	Coeff Variation	# of samples	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor
Parameter		mg/L	mg/L	mg/L	mg/L			Pn	mg/L	CV	n			
Total Ammonia Nitrogen	0.26	16.1	6.55	0.39	0.34	NO	0.99	0.681	7.25	0.65	12	2.01	106	184
Total Residual Chlorine	0.00	0.019	0.011	0.006	0.0046	NO	0.99	0.880	0.59	0.20	36	1.10	106	140